

Name: _____

Automotive Technology

Directions:

Evaluate the student by checking the appropriate number to indicate the degree of competency. The rating for each task should reflect employability readiness rather than the grades given in class.

Student Rating Scale:

- 0 No Exposure** – no experience/knowledge in this area; program/course did not provide instruction in this area
- 1 Unsuccessful Attempt** – unable to meet knowledge or performance criteria and/or required significant assistance
- 2 Partial Demonstration** – met some of the knowledge or performance criteria with or without minor assistance
- 3 Knowledge Demonstrated** – met knowledge criteria without assistance at least once
- 4 Performance Demonstrated** – met performance criteria without assistance at least once
- 5 Repetitive Demonstration** – met performance and/or knowledge criteria without assistance on multiple occasions
- 6 Mastered** – successfully applied knowledge or skills in this area to solve related problems independently

INTRODUCTION TO AUTOMOTIVE TECHNOLOGY

0	1	2	3	4	5	6	A. Appreciate and apply all personal and workplace safety procedures	Notes:
							1. Describe how to use chemicals safely	
							2. Demonstrate the safe use of hand tools	
							3. Demonstrate the safe use of power tools	
							4. Practice the safe use of personal protective equipment (i.e., clothing and safety glasses)	
							5. Describe how to use fire protection equipment safely	
							6. Demonstrate the safe use of shop equipment	
							7. Comply with personal and environmental safety practices in accordance with federal, state, and local safety and environmental regulations/guidelines	
							Other:	

0	1	2	3	4	5	6	B. Perform automotive business tasks	Notes:
							1. Demonstrate effective communication skills (oral and written)	
							2. Prepare work orders and estimates	
							Other:	

0	1	2	3	4	5	6	C. Describe the various vehicle systems and their operations	Notes:
							1. Identify the basic function and operation of the different vehicle systems	
							Other:	

0	1	2	3	4	5	6	D. Demonstrate employability skills	Notes:
							1. Demonstrate a good work ethic (i.e., relations with other, dependability, attitude, and personal hygiene)	
							2. Demonstrate teamwork	

							3. Demonstrate job-seeking techniques (i.e., write a resume, search for a job, arrange references, and apply interview techniques)	
							Other:	

I. ENGINE REPAIR

0	1	2	3	4	5	6	A. Diagnose, remove, and reinstall engine system	Notes:
							1. Identify and interpret engine concern; determine necessary action	
							2. Research applicable service information; locate and interpret identification numbers, certification, and calibration decals	
							3. Conduct performance tests; determine necessary action	
							4. Remove and replace engine in front-wheel drive vehicle (OBD I or newer)	
							5. Remove and replace engine in rear-wheel drive vehicle (OBD I or newer)	
							Other:	

0	1	2	3	4	5	6	B. Diagnose and repair cylinder head and valve train	Notes:
							1. Remove, inspect, and test the cylinder head(s)	
							2. Install, torque, and adjust the cylinder head(s)	
							3. Recondition the cam in block cylinder head(s)	
							4. Recondition OHV cylinder head(s)	
							Other:	

0	1	2	3	4	5	6	C. Diagnose and repair engine block assembly	Notes:
							1. Disassemble the engine block	
							2. Inspect and clean the engine block components; determine necessary action	
							3. Inspect, check, and record the short block measurements; determine necessary action	
							4. Assemble the engine according to manufacturer's specifications	
							Other:	

0	1	2	3	4	5	6	D. Diagnose, maintain, and repair lubrication and cooling system	Notes:
							1. Inspect, test, and repair the oil system and components	
							2. Perform cooling system tests; determine necessary action	
							3. Inspect, replace, and adjust the drive belts and hoses	
							4. Inspect, test, and replace cooling system components	
							5. Test coolant; drain, flush, and refill cooling system with recommended coolant; bleed air as required	

								6. Perform oil and lube service	
								Other:	

II. AUTOMATIC TRANSMISSION AND TRANSAXLE

0	1	2	3	4	5	6	A. Diagnose general transmission and transaxle components	Notes:
							1. Identify and interpret transmission/transaxle concern; assure proper engine operation; determine necessary action	
							2. Research applicable service information; locate and interpret identification numbers, certification, and calibration decals	
							3. Diagnose and performance test transmission/transaxle; determine necessary action	
							Other:	

0	1	2	3	4	5	6	B. Service and maintain transmission and transaxle systems	Notes:
							1. Inspect, adjust, or replace the throttle valve linkages or cables; manual shift linkages or cables; transmission range sensor; check gear select indicator	
							2. Service transmission; perform visual inspection; replace fluids and filters	
							Other:	

0	1	2	3	4	5	6	C. Diagnose and repair in-vehicle transmission and transaxle systems	Notes:
							1. Inspect, adjust, and replace sensors, cables, and actuators	
							2. Inspect and replace external bushings, seals, and gaskets	
							3. Inspect, leak test, flush, and replace cooler, lines, and fittings	
							4. Diagnose electronic transmission control systems using a scan tool; determine necessary action	
							5. Inspect, replace, and align powertrain mounts	
							Other:	

0	1	2	3	4	5	6	D. Diagnose and repair off-vehicle transmission and transaxle systems	Notes:
							1. Remove and reinstall transmission/transaxle and torque converter	
							2. Disassemble, clean, and inspect transmission/transaxle assembly	
							3. Inspect and service the oil pump and converter	
							4. Inspect and service the gear train, shafts, bushings, and case	
							5. Inspect and service the friction and reaction units	
							6. Reassemble the automatic transmission/transaxle assembly; check endplay and adjustments	

								Other:	
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III. MANUAL DRIVE TRAIN AND AXLES

0	1	2	3	4	5	6	A. Diagnose general drive train systems	Notes:
							1. Identify and interpret drive train concern; determine necessary action	
							2. Research applicable service information; locate and interpret identification numbers, certification, and calibration decals	
							3. Determine proper fluid and fluid levels	
							4. Drain and refill transmission/transaxle and final drive unit	
							Other:	

0	1	2	3	4	5	6	B. Diagnose and repair clutch systems	Notes:
							1. Inspect and diagnose the clutch; determine necessary action	
							2. Remove and replace the clutch assembly and components	
							Other:	

0	1	2	3	4	5	6	C. Diagnose and repair manual transmission and transaxle systems	Notes:
							1. Remove and reinstall the transmission/transaxle	
							2. Inspect and diagnose the sensors, switches, linkages, and leaks; perform necessary action	
							3. Clean, disassemble, and inspect the transmission/transaxle; determine necessary action	
							4. Perform necessary repairs, reassemble, and make required adjustments	
							Other:	

0	1	2	3	4	5	6	D. Diagnose and repair drive shaft and half shaft, universal and constant-velocity (CV) joints	Notes:
							1. Inspect and diagnose the drive shaft and universal joints; perform necessary action	
							2. Inspect and diagnose the half shaft and CV joints; perform necessary action	
							Other:	

0	1	2	3	4	5	6	E. Diagnose and repair drive axles	Notes:
							1. Diagnose differential assembly; determine necessary action	
							2. Disassemble and inspect the differential; perform necessary action	
							3. Inspect and diagnose the limited slip differential; perform necessary action	
							4. Inspect and diagnose the drive axle shaft and components; perform necessary action	
							Other:	

0	1	2	3	4	5	6	F. Diagnose and repair four-wheel drive and all-wheel drive systems	Notes:
							1. Diagnose noise, vibrations, and leaks; determine necessary action	
							2. Inspect, adjust, and repair shift controls	
							3. Disassemble and inspect the transfer case; perform necessary action	
							4. Inspect the front-wheel bearings, hubs, and components; perform necessary action	
							5. Inspect and diagnose electrical components; perform necessary action	
							Other:	

IV. STEERING AND SUSPENSION

0	1	2	3	4	5	6	A. Diagnose general suspension and steering systems	Notes:
							1. Identify and interpret steering and suspension concerns; determine necessary action	
							2. Research applicable service information, locate, and interpret identification numbers, certification, and calibration decals	
							Other:	

0	1	2	3	4	5	6	B. Diagnose, maintain, and repair steering systems	Notes:
							1. Diagnose and repair supplemental restraint system (SRS)	
							2. Diagnose and repair steering column and steering shaft	
							3. Test and diagnose electronically controlled steering systems	
							4. Diagnose and repair power steering hydraulic systems	
							5. Diagnose and repair power steering pump	
							6. Diagnose and repair manual and power steering gear (non-rack and pinion)	
							7. Diagnose and repair manual and power steering gear (rack and pinion)	
							8. Inspect and replace steering linkage components	
							Other:	

0	1	2	3	4	5	6	C. Diagnose, maintain, and repair suspension systems	Notes:
							1. Diagnose and repair electronically controlled suspension systems	
							2. Diagnose and repair short and long arm suspension systems	
							3. Diagnose and repair strut suspension systems	
							4. Diagnose and repair strut rods and stabilizer bars	
							5. Remove, inspect, and install steering knuckles	

								6. Remove and inspect spring assemblies (coil, leaf torsion bar, and transfer)	
								7. Inspect, remove, and replace shock absorbers (front and rear)	
								8. Remove, inspect, and replace front and rear wheel bearings	
								9. Lubricate steering and suspension systems	
								Other:	

0	1	2	3	4	5	6	D. Diagnose and repair wheel alignment	Notes:
							1. Differentiate between steering and suspension concerns	
							2. Diagnose steering and tire wear problems and determine necessary action	
							3. Check front wheel set back and cradle (subframe) alignment	
							4. Perform alignment procedures; set correct alignment angles	
							Other:	

0	1	2	3	4	5	6	E. Diagnose and repair wheels and tires	Notes:
							1. Diagnose and inspect tire wear and inflation; perform necessary action	
							2. Diagnose and repair wheel/tire vibration, shimmying, and noise	
							3. Rotate tires following manufacturer's specifications	
							4. Diagnose and repair vehicle pull (lead) problems	
							5. Remove, inspect, and repair tire wheel assemblies	
							Other:	

V. BRAKES

0	1	2	3	4	5	6	A. Diagnose general brake systems	Notes:
							1. Identify and interpret brake system concern; determine necessary action	
							2. Research applicable service information, locate and interpret identification numbers, certification, and calibration decals	
							Other:	

0	1	2	3	4	5	6	B. Diagnose and repair hydraulic system	Notes:
							1. Diagnose pressure concerns using hydraulic principles, determine necessary action	
							2. Measure brake pedal height; determine necessary action	
							3. Remove, inspect, bench bleed, and install the master cylinder	
							4. Diagnose hydraulic brake system concerns; determine necessary action	
							5. Inspect brake lines, hoses, fittings, and supports; replace and tighten as needed	
							6. Select, handle, store, and fill brake fluids	

								7. Inspect, test, and replace the valves (metering, proportioning, pressure differential, and combination valves)	
								8. Inspect, test, and replace components of the brake warning light system	
								9. Bleed and flush the hydraulic system	
								Other:	

0	1	2	3	4	5	6	C. Diagnose and repair drum brakes	Notes:
							1. Diagnose drum brake system concerns; determine necessary action	
							2. Remove, clean, inspect, and measure brake drums; refinish as necessary	
							3. Remove, clean, inspect, and adjust brake shoes and related hardware	
							4. Remove, inspect, and install wheel cylinders	
							5. Install the wheel; torque lug nuts; make final checks and adjustments	
							Other:	

0	1	2	3	4	5	6	D. Diagnose and repair disc brakes	Notes:
							1. Diagnose disc brake system concerns; determine necessary action	
							2. Remove, clean, lubricate, and inspect the caliper; replace as needed	
							3. Remove, clean, and inspect the pads and retaining hardware; determine necessary action	
							4. Clean, inspect, and measure rotor; remove, refinish, and reinstall as necessary	
							5. Adjust calipers equipped with an integrated parking brake system	
							6. Install the wheel; torque lug nuts; make final checks and adjustments	
							Other:	

0	1	2	3	4	5	6	E. Diagnose and repair power assist units	Notes:
							1. Diagnose vacuum power assist units concerns; determine necessary action	
							2. Diagnose hydro-boost system concerns; determine necessary action	
							Other:	

0	1	2	3	4	5	6	F. Diagnose and repair miscellaneous brake-related components	Notes:
							1. Diagnose wheel bearing noises and vibration concerns; determine necessary action	
							2. Remove, clean, inspect, repack, and install wheel bearings, seals, and hubs	
							3. Inspect, clean, lubricate, adjust, and replace parking brake cables and components; check operation of the parking brake indicator light system	
							4. Check operation of the stop light system; determine necessary action	

								5. Inspect and replace wheel studs	
								Other:	

0	1	2	3	4	5	6	G. Diagnose and repair antilock brake and traction control systems	Notes:
							1. Diagnose antilock brake system concerns (consider vehicle modification); determine necessary action	
							2. Identify and inspect antilock brake system (ABS) components; determine necessary action	
							3. Diagnose ABS electronic controls using self-diagnostic and/or recommended test equipment; determine necessary action	
							4. Depressurize, bleed, remove, and install ABS components	
							5. Test, diagnose, and service ABS speed sensors using a multimeter and oscilloscope	
							6. Identify traction control system components	
							Other:	

VI. ELECTRICAL/ELECTRONIC SYSTEMS

0	1	2	3	4	5	6	A. Diagnose general electrical systems	Notes:
							1. Identify and interpret electrical/electronic system concern; determine necessary action	
							2. Research applicable service information, locate and interpret identification numbers, certification, and calibration decals	
							3. Diagnose electrical/electronic integrity of circuits using principles of electricity and wiring diagrams	
							4. Demonstrate the proper use of a digital multimeter during electrical circuit diagnosis	
							5. Check and measure electrical circuits using a test light, voltmeter, ammeter, and ohmmeter	
							6. Check electrical circuits using a fused jumper wire; inspect and test fusible links circuit breakers, and fuses; determine necessary action	
							7. Locate and measure shorts, grounds, opens, resistance parasitic draw in switches, connectors, relays, solid-state devices, and wires	
							8. Repair wiring harness and connectors; perform solder repair of electrical wiring	
							Other:	

0	1	2	3	4	5	6	B. Diagnose and service batteries	Notes:
							1. Perform battery state-of-charge and capacity test	
							2. Maintain or restore electronic memory functions	
							3. Inspect, clean, fill, replace, and charge the battery	
							4. Inspect, clean, and secure cables, connectors, clamps, and hold-downs; repair or replace as needed	

								5. Start a vehicle using jumper cables or an auxiliary power supply	
								Other:	

0	1	2	3	4	5	6	C. Diagnose and repair starting systems	Notes:
							1. Perform starter current draw and circuit voltage drop tests; determine necessary action	
							2. Inspect and test the starter components, relays, and solenoids; determine necessary action	
							3. Remove and install the starter	
							4. Differentiate between electrical and engine mechanical problems that cause slow-crank or no-crank	
							Other:	

0	1	2	3	4	5	6	D. Diagnose and repair charging system	Notes:
							1. Perform charging system tests- output, undercharge, no-charge, overcharge, and voltage drop; determine necessary action	
							2. Remove, inspect, adjust, and install the generator (alternator) and components	
							Other:	

0	1	2	3	4	5	6	E. Diagnose and repair lighting systems	Notes:
							1. Diagnose lighting system problems; determine necessary action	
							2. Inspect, replace, and aim headlights and bulbs	
							3. Inspect and diagnose turn and hazard lighting systems; perform necessary action	
							Other:	

0	1	2	3	4	5	6	F. Diagnose and repair gauges, warning devices, and driver information systems	Notes:
							1. Inspect and test gauges, sending units, connectors, wires, and printed circuits; determine necessary action	
							2. Diagnose the cause of incorrect operation of warning devices and other driver information systems; determine necessary action	
							Other:	

0	1	2	3	4	5	6	G. Diagnose and repair horn and wiper/washer systems	Notes:
							1. Diagnose incorrect horn operation; perform necessary action	
							2. Diagnose incorrect wiper/washer operation; perform necessary action	
							Other:	

0	1	2	3	4	5	6	H. Diagnose and repair automobile accessories	Notes:
							1. Diagnose and repair motor driven accessory circuits, heated accessories, electric locks, cruise control, radios, body electronics, communication systems, and anti-theft systems	
							2. Diagnose supplemental restraint system concerns; determine necessary action	
							3. Disarm and enable the air bag system for vehicle service	
							Other:	

VII. HEATING AND AIR CONDITIONING

0	1	2	3	4	5	6	A. Diagnose and repair A/C system	Notes:
							1. Identify and interpret heating and air conditioning concern; determine necessary action	
							2. Research applicable service information, locate, and interpret identification numbers, certification, and calibration decals	
							3. Diagnose and performance test the A/C system using principles of refrigeration; determine necessary action	
							Other:	

0	1	2	3	4	5	6	B. Diagnose and repair refrigeration system components	Notes:
							1. Diagnose and repair A/C compressor and clutch components	
							2. Diagnose and repair evaporator, condenser, and related components	
							Other:	

0	1	2	3	4	5	6	C. Diagnose and repair heating, ventilation, and engine cooling systems	Notes:
							1. Diagnose the heating system; determine necessary action	
							2. Repair or replace the heating system components	
							Other:	

0	1	2	3	4	5	6	D. Diagnose and repair operating systems and related controls	Notes:
							1. Diagnose the automatic and electrical temperature controls	
							2. Repair or replace the automatic and electrical temperature controls	
							Other:	

0	1	2	3	4	5	6	E. Demonstrate refrigerant recovery, recycling and handling	Notes:
							1. Demonstrate the proper use and maintenance of refrigerant handling equipment	
							2. Identify, recover, recycle, label, and store refrigerant	
							3. Evacuate and charge the A/C system	

								Other:	
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VIII. ENGINE PERFORMANCE

0	1	2	3	4	5	6	A. Diagnose general engine functions	Notes:
							1. Identify and interpret engine performance concern; determine necessary action	
							2. Research applicable service information, locate, and interpret identification numbers, certification, and calibration decals	
							3. Perform engine performance test/inspection; determine necessary action	
							Other:	

0	1	2	3	4	5	6	B. Diagnose and repair computerized engine controls	Notes:
							1. Retrieve, record, and clear stored diagnostic codes on OBD I and OBD II systems	
							2. Diagnose emissions and driveability concerns with stored and non-stored diagnostic trouble codes; determine necessary action	
							3. Check for module communication errors and interpret scan tool data	
							4. Inspect, test, and repair computerized engine control system sensors, control modules, and circuits using a graphing multimeter and digital storage oscilloscope	
							5. Access and use service information to perform step-by-step diagnosis	
							6. Diagnose driveability and emissions problems resulting from malfunctions of interrelated systems; determine necessary action	
							Other:	

0	1	2	3	4	5	6	C. Diagnose and repair ignition system	Notes:
							1. Diagnose ignition system related problems on vehicles with electronic ignition (EI) systems; determine necessary action	
							2. Diagnose ignition system related problems on vehicles with distributor ignition (DI) systems; determine necessary action	
							3. Inspect and test ignition primary and secondary circuit wiring and components; perform necessary action	
							4. Inspect, test, and service the distributor	
							5. Check and adjust ignition system timing and timing advance/retard	
							Other:	

0	1	2	3	4	5	6	D. Diagnose and repair fuel, air induction, and exhaust systems	Notes:
							1. Diagnose driveability problems related to carburetor-type fuel systems; determine necessary action	

								2.	Diagnose driveability problems related to injection-type fuel systems; determine necessary action	
								3.	Replace components related to carburetor-type fuel systems; make required adjustments	
								4.	Replace components related to injection-type fuel systems; make required adjustments	
								5.	Test electronic fuel, air induction, and fuel-delivery components and circuits; determine necessary action	
								6.	Inspect and test the exhaust system; determine and perform necessary action	
								Other:		

0	1	2	3	4	5	6	E. Diagnose and repair emissions control systems	Notes:
							1. Diagnose emissions control systems; determine necessary action	
							2. Inspect, clean, and replace Positive Crankcase Ventilation (PCV) system components	
							3. Inspect, clean, and replace electrical/electronic components of the Exhaust Gas Recirculation (EGR) system	
							4. Inspect and replace the exhaust system	
							5. Inspect, clean, and replace the air management system	
							6. Inspect, clean, and replace the intake air temperature control	
							7. Inspect, clean, and replace fuel vapor controls	
							Other:	

0	1	2	3	4	5	6	F. Conduct miscellaneous engine service	Notes:
							1. Adjust valves on engines with mechanical or hydraulic lifters	
							2. Remove and replace the timing belt; verify correct camshaft timing	
							3. Remove and replace the thermostat	
							4. Inspect and test mechanical/electrical fans and their components; perform necessary action	
							Other:	

0	1	2	3	4	5	6	G. Demonstrate leadership skills in the classroom, industry, and society	Notes:
							1. Demonstrate an understanding of SkillsUSA-VICA, its structure, and activities	
							2. Demonstrate an understanding of one's personal values	
							3. Perform tasks related to effective personal management skills	
							4. Demonstrate interpersonal skills	
							5. Demonstrate etiquette and courtesy	

								6. Demonstrate effectiveness in oral and written communication	
								7. Develop and maintain a code of professional ethics	
								8. Maintain a good professional appearance	
								9. Perform basic tasks related to securing and terminating employees	
								10. Perform basic parliamentary procedures in a group meeting	
								Other:	

*****NOTE: These competencies are addressed in the Missouri SkillsUSA-VICA Curriculum Guide lessons***